

No. BCTC-FYC190702016R

BCTC

Date: July.02, 2019

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Applicant Address

The submitted sample and sample information was/were submitted and identified by/on the behalf BCTC of the client

Sample name Sample received date **Testing period** 

June.21,2019 June.21,2019 - July.02, 2019

**Test requested** 

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1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.

2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.

3. As specified by client, to test the Di-isobutyl phthalate(DIBP), Dibutyl phthalate(DBP), Benzyl butyl phthalate(BBP), Bis(2-ethyl(hexyl) phthalate)(DEHP)in the submitted sample(s).

According to the RoHS Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863

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\*\*\*\*\*For more detailed information, please refer to the next page\*\*\*\*\*

Tested by Xingping Li BCIC



### Lab:Shenzhen BCTC Testing Co.,Ltd.

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#### **Test Method:**

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#### A. Screening test by XRF spectroscopy

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XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

| BCIL    | Limit of IEC 62321-3                    | MDL                                     |          |                   |
|---------|---|---|----------|-------------------|
| Element | Polymers and metals                     | Composite material                      | Polymers | Other<br>material |
| Pb      | BL≤(700-3σ) <x <(1300+3σ)<br="">≤OL</x> | BL≤(500-3σ) <x <(1500+3σ)<br="">≤OL</x> | 10 mg/kg | 50 mg/kg          |
| Cd      | BL≤(70-3σ) <x <(130+3σ)<br="">≤OL</x>   | LOD≤(50-3σ) <x <(150+3σ)<br="">≤OL</x>  | 10 mg/kg | 50 mg/kg          |
| Hg      | BL≤(700-3σ) <x <(1300+3σ)<br="">≤OL</x> | BL≤(500-3σ) <x <(1500+3σ)<br="">≤OL</x> | 10 mg/kg | 50 mg/kg          |
| Cr      | BL≤(700-3σ)< X                          | BL≤(500-3σ)< X                          | 10 mg/kg | 50 mg/kg          |
| Br      | BL≤(300-3σ)< X                          | BL≤(250-3σ)< X                          | 10 mg/kg | 50 mg/kg          |
| Note:   | OFTC                                    | BETC                                    |          |                   |

#### Note:

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BCTC -BL = Under the XRF screening limit

SCIC -OL = Further chemical test will be conducted while result is above the screening limit

-X= The symbol "X" marks the region where further investigation is necessary

 $-3\sigma$ = The reproducibility of analytical instruments

-LOD= Detection limit

-"--" = Not regulated.

| B. Chemical Test                          | BCTC                       |                          |          |            |
|---|----------------------------|--------------------------|----------|------------|
| Test Item(s)                              | Test Method                | Measured<br>Equipment(s) | MDL      | Limit      |
| Lead (Pb)                                 | IEC 62321-5:2013 Ed.1.0    | ICP-OES                  | 2 mg/kg  | 1000 mg/kg |
| Cadmium (Cd)                              | IEC 62321-5:2013 Ed.1.0    | ICP-OES                  | 2 mg/kg  | 100 mg/kg  |
| Mercury (Hg)                              | IEC 62321-4:2013+AMD1:2017 | ICP-OES                  | 2 mg/kg  | 1000 mg/kg |
|   | IEC 62321-7-1:2015 Ed.1.0  |                          |          | 1000 mg/kg |
| Hexavalent Chromium Cr(VI)                | IEC 62321-7-2:2017 Ed.1.0  | UV-VIS                   | 8 mg/kg  | 1000 mg/kg |
| Polybrominated Biphenyls<br>(PBBs)        | IEC 62321-6:2015 Ed.1.0    | GC-MS                    | 5 mg/kg  | 1000 mg/kg |
| Polybrominated Diphenyl<br>Ethers (PBDEs) | IEC 62321-6:2015 Ed.1.0    | GC-MS                    | 5 mg/kg  | 1000 mg/kg |
| Phthalates                                | IEC 62321-8:2017 Ed.1.0    | GC-MS                    | 50 mg/kg | 1000 mg/kg |

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倍测检测 BCTC TEST

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**Test Results:** 

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| Description White plastic | Pb<br>Cd<br>Hg<br>Cr(Cr(VI))<br>Br(PBBs&PBDEs)<br>Pb<br>Cd | Unit (mg/kg)<br>BL<br>BL<br>BL<br>BL<br>BL<br>BL<br>BL  | Unit (mg/kg)<br>/<br>/<br>/<br>/<br>/<br>/<br>/  | PASS   |
|---------------------------|--|---|--|--|
| TC                        | Cd<br>Hg<br>Cr(Cr(VI))<br>Br(PBBs&PBDEs)<br>Pb<br>Cd       | BL<br>BL<br>BL<br>BL<br>BL  |  | PASS   |
| TC                        | Hg<br>Cr(Cr(VI))<br>Br(PBBs&PBDEs)<br>Pb<br>Cd             | BL<br>BL<br>BL<br>BL  |  | PASS   |
| -                         | Cr(Cr(VI))<br>Br(PBBs&PBDEs)<br>Pb<br>Cd                   | BL<br>BL<br>BL  |  |  |
| -                         | Br(PBBs&PBDEs)<br>Pb<br>Cd                                 | BL<br>BL  | <br> <br>  |  |
| -                         | Pb<br>Cd   | BL  | /  |  |
| -                         | Cd   | 13 m  | /  | 1  |
| -                         |  |   | 1  | -  |
|                           | Hg   | BL  | BCT  | PASS   |
| -                         | Cr(Cr(VI))   | BL  | /  |  |
|                           | Br(PBBs&PBDEs)   | BL BL   | , ,  | arte   |
|                           | Pb   | BL  | . /  | BLIT   |
|                           | Cd   | BL  | , /  | -  |
| Brown leather             |  | And the second second   | , /  | PASS   |
|                           | -  |   |  |  |
|                           | 100 F  |   | /  | -  |
|                           |  |   | . /  |  |
| F                         | Cd   | BL  | /  | BCIN   |
| Brown coil                |  | BL  | /  | PASS   |
| 0000                      | -  | BL  | 1  |  |
| Carlo -                   | Br(PBBs&PBDEs)   | BL  | /  | C.   |
|                           | Pb   | BL  | / 80   | 13 C   |
| F                         | Cd   | BL  | /  |  |
| Silver battery            | Hg   | BL  | /  | PASS   |
|                           | Cr(Cr(VI))   | BL  | 1  |  |
|                           | Br(PBBs&PBDEs)   | BL  | BCICI  | -  |
| E                         | Pb   | BL  | /  |  |
|                           | Cd   | BL  | /  | BCTC   |
| Brown EVA                 | Hg   | BL  | /  | PASS   |
| -10                       | Cr(Cr(VI))   | BL  | /  | ]  |
| 361~                      | Br(PBBs&PBDEs)   | BL  | /  |  |
|                           | Brown coil   | Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Brown coil           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Brown coil           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Silver battery           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Hg           Cd           Hg           Cd           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs) | Hg         BL           Cr(Cr(VI))         BL           Br(PBBs&PBDEs)         BL           Pb         BL           Cd         BL           Cd         BL           Cr(Cr(VI))         BL           Brown coil         Hg         BL           Cd         BL         C           Brown coil         Hg         BL           Cr(Cr(VI))         BL         C           Br(PBBs&PBDEs)         BL         C           Silver battery         Hg         BL           Cd         BL         C           Cr(Cr(VI))         BL         B           Br(PBBs&PBDEs)         BL         C           Br(PBBs&PBDEs)         BL         C           Gd         BL         C           Gd         BL         C           Gd         BL         C           Br(PBBs&PBDEs)         BL         C           Gr(Cr(VI))         BL         C           Br(PBBs&PBDEs)         BL         C | Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBBs&PBDEs)         BL         /           Pb         BL         /           Cd         BL         /           Brown coil         Hg         BL         /           GCd         BL         /         /           Brown coil         Hg         BL         /           GCd         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Silver battery         Hg         BL         /           GCd         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Brown EVA         Hg         BL         /           GCd         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Br(PBBs&PBDEs)         BL         /         /           Br(PBBs&PBDEs)         BL         /         / |

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| Test | Report |

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BCI

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|                  | Ph             | BI   | 1   |   |
|------------------|----------------|--|---|---|
|                  |                |  |   | -   |
| Green nch        |                |  |   | PASS  |
| - C.             |                |  |   | FA00 6  |
| · · · ·          |                |  |   | -   |
| 051              |                | ,  |   |   |
| BC               |                |  |   |   |
|                  | ELC 1 %        |  |   | PASS  |
|                  | -              |  |   | PASS  |
|                  |                | BL ,   | 1   |   |
| BCIT             |                | 7  | 1   |   |
|                  |                |  | ecic  | -   |
|                  | (3. m)         |  | 1   |   |
| Silver connector |                |  | /   | PASS  |
|                  |                |  | /   | De  |
|                  |                | 100 million (100 m | /   |   |
| BCTC             |                |  | /   | -   |
|                  | Cd             | BL   | 1   |   |
| LED              | Hg             | BL   | / 84-   | PASS  |
|                  | Cr(Cr(VI))     | BL   | 1   |   |
| · · · · ·        | Br(PBBs&PBDEs) | BCILI  | 1   | BCI   |
|                  | Pb             | BL   | 1   |   |
| 25               | Cd             | BL   | 1 1   |   |
| Capacitance      | Hg             | BL   | /   | PASS  |
|                  | Cr(Cr(VI))     | BL   | 1 8   | CIC   |
|                  | Br(PBBs&PBDEs) | /  | 1   |   |
|                  | Pb             | BL   | 1   |   |
| BCIL             | Cd             | BL   | 1   |   |
| Resistance       | Hg             | BL   | 212.00  | PASS  |
|                  | Cr(Cr(VI))     | BL   | /   |   |
|                  | Br(PBBs&PBDEs) | 1  | 1   | BCTC  |
|                  | Pb BC1         | BL   | /   |   |
|                  | Cd             | BLaCIC   | /   |   |
| Switch           | Hg             | BL   | /   | PASS  |
|                  | Cr(Cr(VI))     | BL   | PLACE   |   |
|                  | Br(PBBs&PBDEs) | 1  | 1   |   |
|                  | Resistance     | Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Br(PBBs&PBDEs)           Br(PBBs&PBDEs)           Silver connector           Hg           Cd           Br(PBBs&PBDEs)           Br(PBBs&PBDEs)           Br(PBBs&PBDEs)           Br(PBBs&PBDEs)           Cd           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Hg           Cd           Hg           Cr(Cr(VI))           Br(PBBs&PBDEs)           Pb           Cd           Hg           Cr(Cr(VI))  | Green pcbCdBLGreen pcbHgBLCr(Cr(VI))BLBr(PBBs&PBDEs)/ICHgBLCdBLCdBLCdBLCr(Cr(VI))BLBr(PBBs&PBDEs)/Silver connectorHgBLCdBLCdBLCdBLCdBLCdBLCdBLCdBLCdBLCr(Cr(VI))BLBr(PBS&PBDEs)BLCdBLCdBLCf(Cr(VI))BLBr(PBS&PBDEs)/CdBLCr(Cr(VI))BLCdBLCdBLCr(Cr(VI))BLBr(PBS&PBDEs)/PbBLCdBLCdBLCdBLCdBLCdBLCdBLCr(Cr(VI))BLBr(PBS&PBDEs)/PbBLCdBLCdBLCdBLCdBLCdBLCdBLCdBLCdBLHgBLCdBLHgBLCdBLHgBLCdBLHgBLCdBLHgBLCdBLHg <td< td=""><td>Green pcb         Cd         BL         /           Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBBs&amp;PBDEs)         /         /           IC         Pb         BL         /           Cd         BL         /         /           IC         Hg         BL         /           Cd         BL         /         /           Cd         BL         /         /           IC         Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBs&amp;PBDEs)         /         /         /           Silver connector         Hg         BL         /           Gr(Cr(VI))         BL         /         /           Br(PBs&amp;PBDEs)         BL         /         /           Cd         BL         /         /           LED         Hg         BL         /           Cd         BL         /         /           Cd         BL         /         /           Capacitance         Hg         BL         /           Cd         BL         /         /</td></td<> | Green pcb         Cd         BL         /           Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBBs&PBDEs)         /         /           IC         Pb         BL         /           Cd         BL         /         /           IC         Hg         BL         /           Cd         BL         /         /           Cd         BL         /         /           IC         Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBs&PBDEs)         /         /         /           Silver connector         Hg         BL         /           Gr(Cr(VI))         BL         /         /           Br(PBs&PBDEs)         BL         /         /           Cd         BL         /         /           LED         Hg         BL         /           Cd         BL         /         /           Cd         BL         /         /           Capacitance         Hg         BL         /           Cd         BL         /         / |

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| Tested Item(s)                      | Results<br>Unit (mg/kg) |  |
|-------------------------------------|-------------------------|--|
|                                     | 1-13                    |  |
| Di-isobutyl phthalate(DIBP)         | N.D.                    |  |
| CAS #:84-69-5                       | N.D.                    |  |
| Dibutyl phthalate(DBP)              | N.D.                    |  |
| CAS #:84-74-2                       | N.D.                    |  |
| Benzylbutyl phthalate(BBP)          | N.D.                    |  |
| CAS #:85-68-7                       | N.D.                    |  |
| Bis(2-ethyl(hexyl) phthalate)(DEHP) | N.D.                    |  |
| CAS #:117-81-7                      | N.D.                    |  |

#### Note:

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-" / "= Not conducted.

-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than  $0.1\mu g/cm^2$  with  $50cm^2$  sample surface area used.

-Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than  $0.13\mu$ g/cm<sup>2</sup> with 50cm<sup>2</sup> sample surface area used.

#### Remark:

- The screening results are only used for reference.

- When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

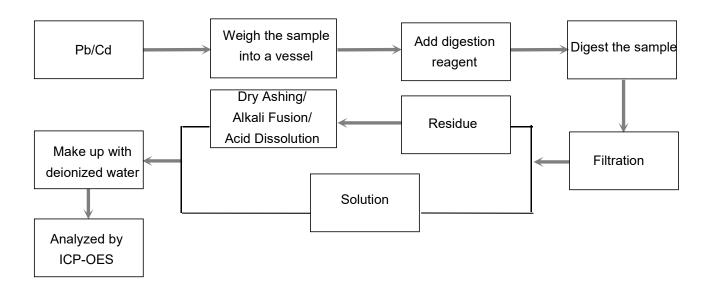
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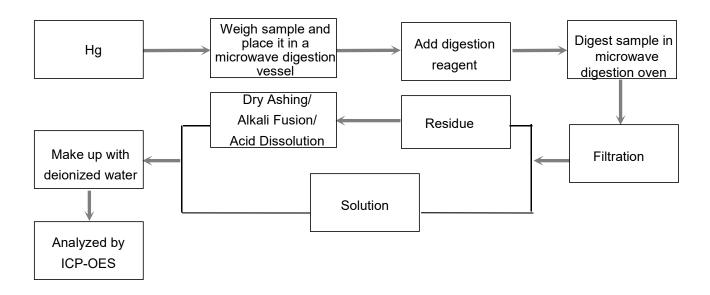
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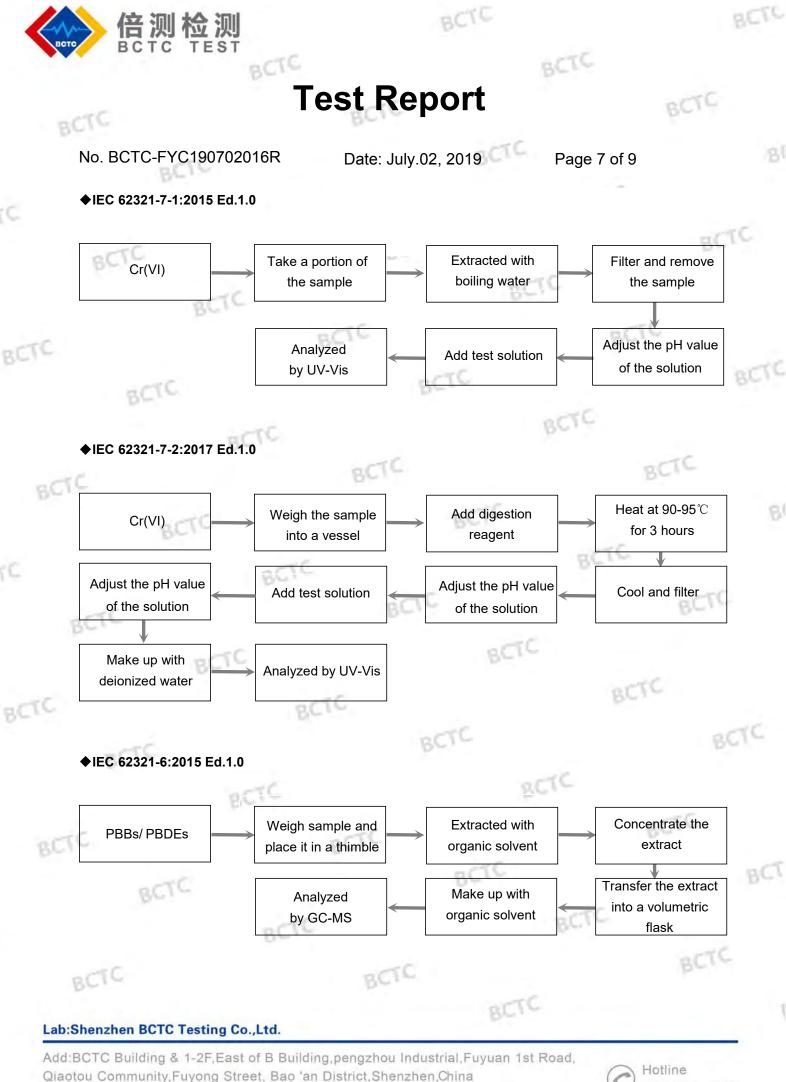
#### **Test Process:**

The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury. ♦IEC 62321-5:2013 Ed.1.0



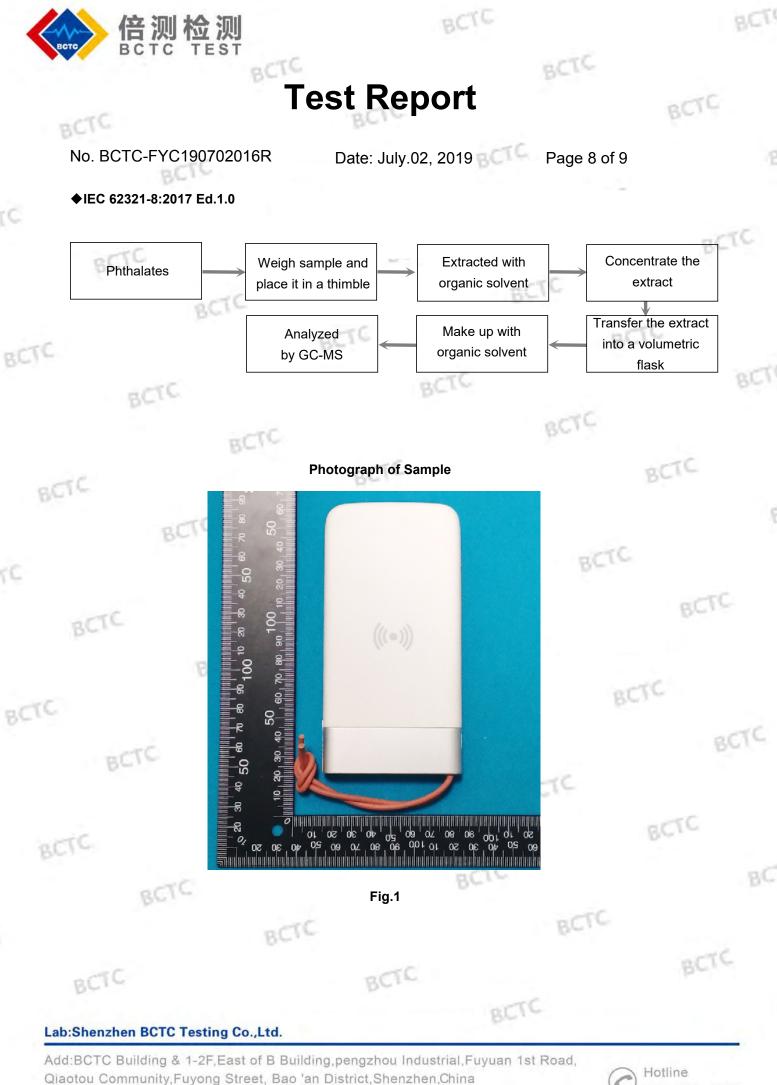
#### ♦IEC 62321-4:2013+AMD1:2017





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#### Photo(s) of the tested component(s)

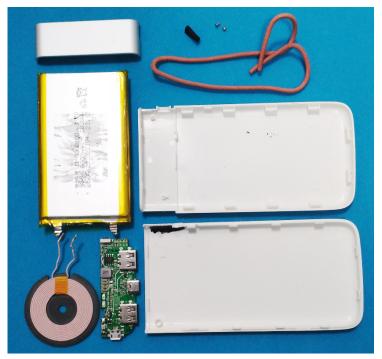


Fig.2





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